Form 1648T, 11-82

OPERATION AND CALIBRATION INSTRUCTIONS

Lite-A-Line 4 wheel aligner

HUNTER
engineering company

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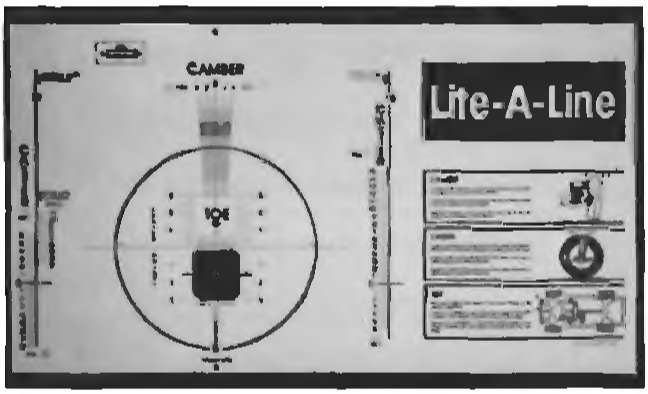

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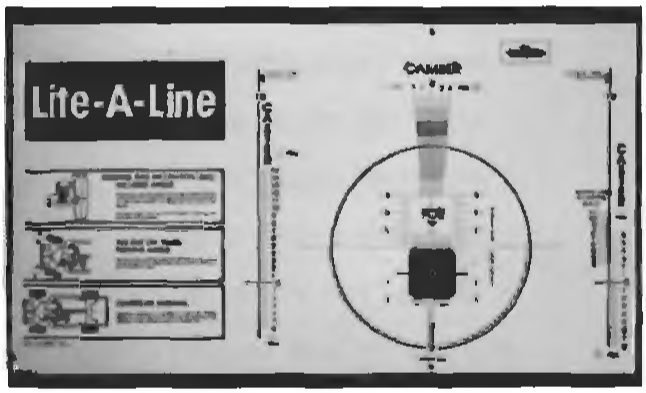

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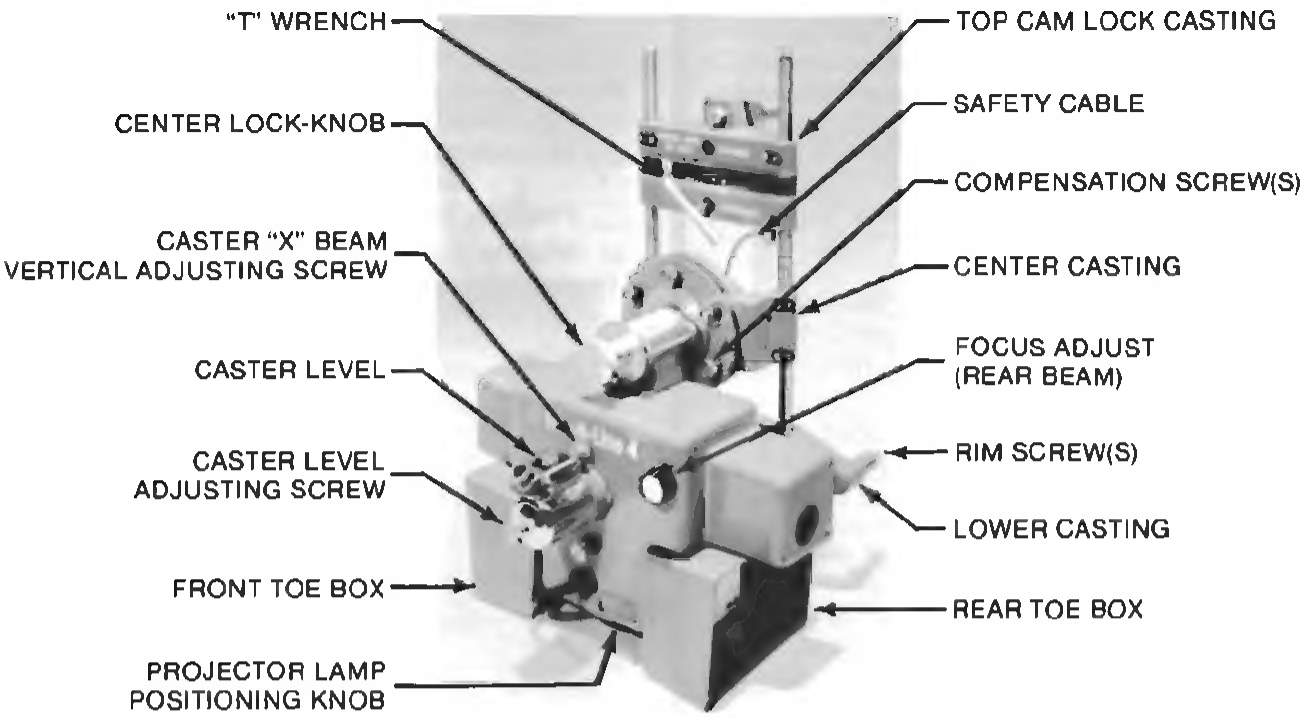

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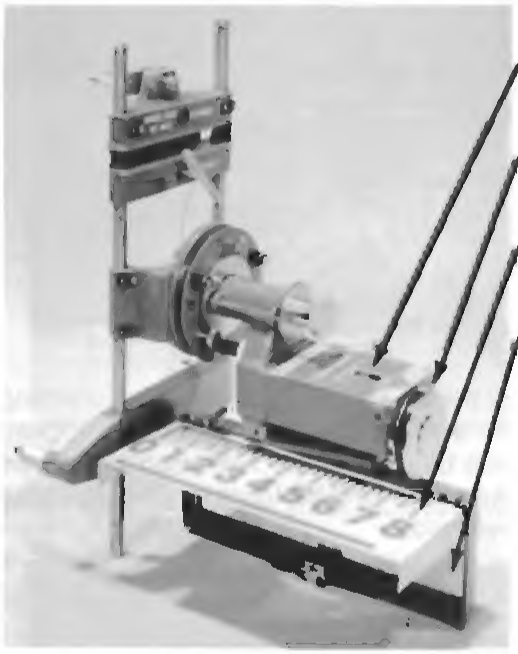

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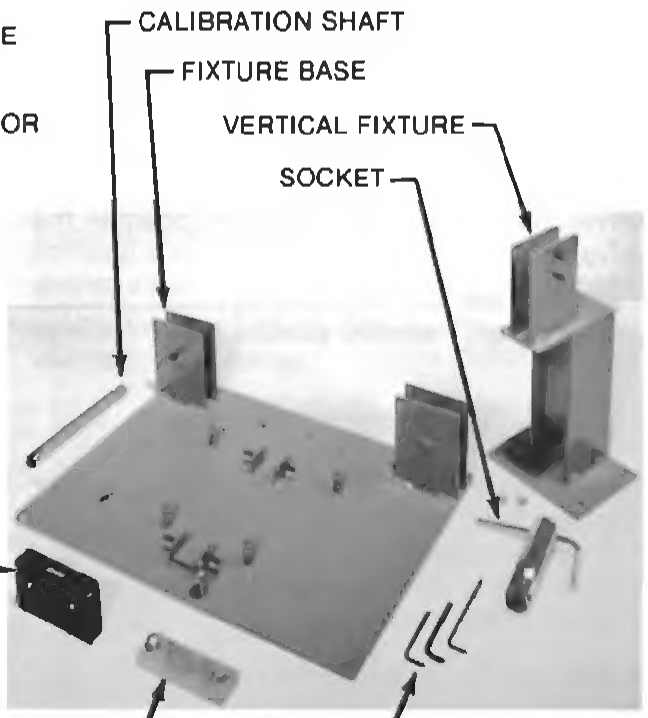


221-113-1 REAR WHEEL INSTRUMENT CHECK FIXTURE

INTRODUCTION

Do not operate the aligner until you understand all of its functions. Read and thoroughly familiarize yourself with the contents of this manual.

FOR YOUR PROTECTION

Upon delivery of your wheel aligner, fill out your guarantee cards and mail promptly. Your equipment was engineered and manufactured to give many years of dependable, trouble free service. If it is given just reasonable care and operated according to the instructions, it should make wheel aligning one of your most profitable services.

FOR YOUR SAFETY

ALWAYS use wheel chocks after positioning vehicle on rack. Use caution when jacking vehicle. Read and follow all caution and warning labels affixed to your equipment and tools.

VEHICLE PREPARATION

Check loading of vehicle in accordance with manufacturer's specifications. Accurately check and adjust tire pressure. Inspect for uneven, worn tires (install best tires on front). Inspect all suspension and steering linkage components for wear or damage. A thorough inspection is as important as the alignment measurements themselves. NOTE: During inspection, position the valve stem of the wheels to a 2 o'clock location to facilitate connecting the sensor safety cables.

IMPORTANT NOTE

FRONT WHEEL (TWO WHEEL) ALIGNMENT (GEOMETRIC CENTERLINE REFERENCE)
Front wheel projectors must be installed and compensated. Uncompensated rear wheel instruments may be used.

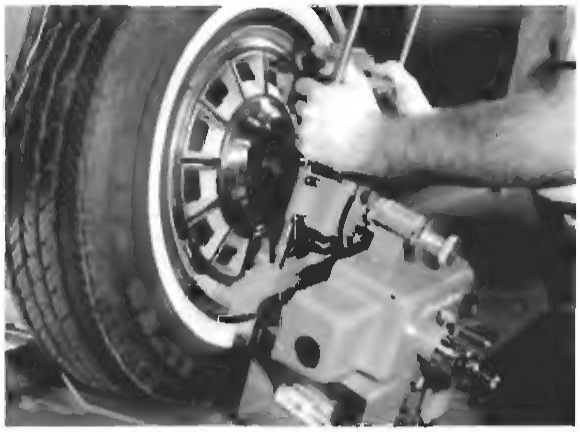
FOUR WHEEL ALIGNMENT (THRUST LINE REFERENCE)
Front wheel projectors and rear wheel instruments must be installed and compensated.

INSTALLING FRONT PROJECTORS

Wheels with rim lip:

Place the T-wrench in the "EXPAND" socket of the top cam lock casting.

Position the two lower rim screws on the wheel rim.



Slide the top cam lock casting up to engage the top two rim screws with the wheel rim.

Check that all four rim screws are contacting the rim and set the cam lock in the locked position by turning the T-wrench 180°. (The locking action will be from the inside of the rim outward.)

Wheels with no rim lip:

Place the T-wrench in the "CONTRACT" socket of the top cam lock casting.

Position the two bottom rim screws on the outside of the rim.

Slide the top cam lock casting down to engage the two top rim screws on the outside of the rim.

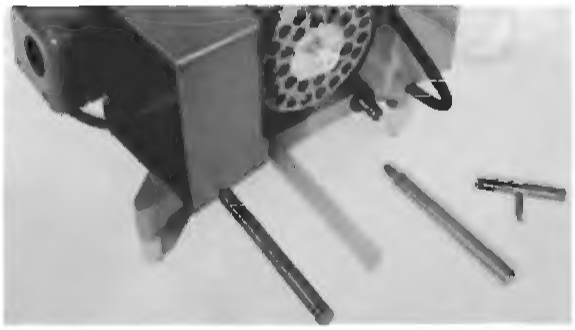
Set the cam lock to the locked position by turning the T-wrench 180°. (The locking action will now be from the outside of the rim inward.)

Test the security of the installation by lightly tugging on the two adaptor rods.

Slide the center casting up or down on the adaptor rods to approximately align it with the wheel center.

Connect the projector safety cable to the valve stem of the wheel.

NOTE: For small wheels, it may be necessary to remove the two rod extensions by loosening the lower casting screws (using the T-wrench) and unscrewing the rod extensions. Retighten the lower casting screws.



INSTALLING REAR WHEEL INSTRUMENTS

Follow the same procedure as for front projectors.

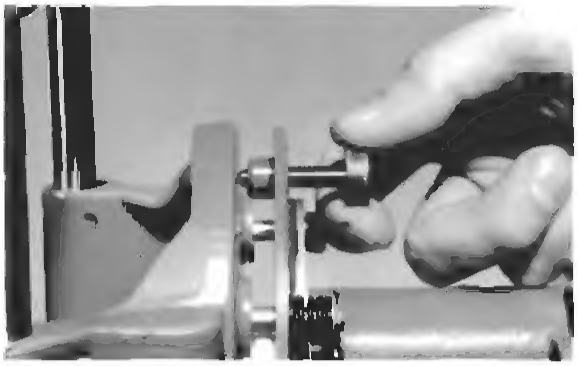
COMPENSATING FRONT PROJECTORS

Apply the emergency brake and chock the rear wheels. Place the transmission of front wheel drive vehicles in neutral. Place the transmission of rear wheel drive vehicles in park.

Jack up front wheels to clear the turning angle gages.

Loosen the center lock knob.

Adjust the three compensator screws so that the ball ends of the screws are visible between the plate and the casting.

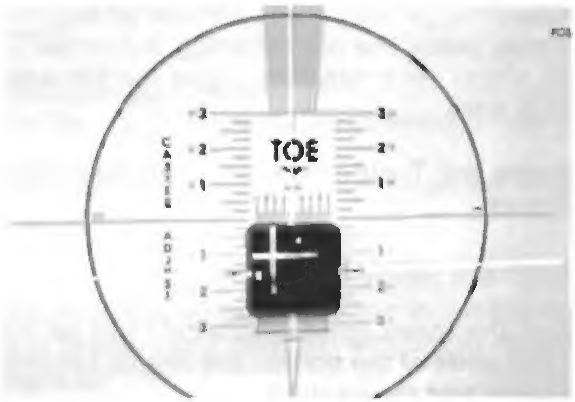


Turn on the projector lamp and adjust the positioning knob (by turning, raising or lowering, or tilting) to obtain the brightest and sharpest light beam on the chart.

(For initial adjustment, hold a piece of paper in front of the lens opening and adjust the positioning knob until the bulb filament image is in focus and centered in the opening.)

Slowly rotate the wheel by hand and observe the sideways oscillation of the vertical light beam on the chart.

Position the chart so the vertical red "toe" line is approximately midway between the light beam oscillation extremes.



Stop the wheel at one extreme of oscillation.

Adjust the compensator screw at the 9 o'clock or 3 o'clock position to bring the light beam approximately to the red "Toe" line. (NOTE: It may be necessary to rotate the wheel slightly to bring the compensator screws to the 9 o'clock or 3 o'clock position.)

Continue to compensate until total oscillation is reduced to less than 1/16". (1.6mm).

Repeat this procedure on opposite wheel.

With the wheel adaptors in the upright position, center the turning angle gages under the front wheels, remove the lock-pins, lower the vehicle and jounce.

On front wheel drive vehicles, place the transmission in park.

COMPENSATING REAR INSTRUMENTS

(FOR 4-WHEEL ALIGNMENT — THRUST LINE REFERENCE

Chock the front wheels.

Raise rear of vehicle.

Release the parking brake. On rear wheel drive vehicles, place the transmission in neutral. On front wheel drive vehicles, place the transmission in park.

Remove the T-wrenches from the instrument adaptors.

Loosen the center lock knob.

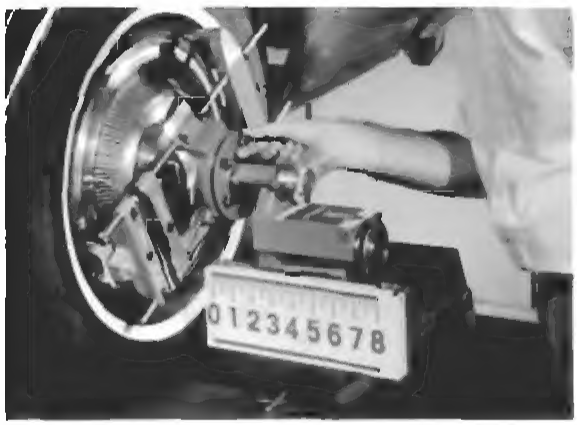
Adjust the three compensator screws so that the ball ends of the screws are visible between the plate and the casting.

Slowly rotate the wheel by hand and observe the movement of the camber level bubble.

Adjust the camber knob to center the bubble movement on the level.

Rotate the wheel to position the level bubble near one end of its movement.

With the compensator screw directly above the spindle, (the one at the 12 o'clock position), adjust the level bubble approximately to center.



Repeat this procedure of rotating the wheel and adjusting the level, always using the compensator screw at the 12 o'clock position.

The level bubble will remain stationary during a complete revolution of the wheel when compensation is complete.

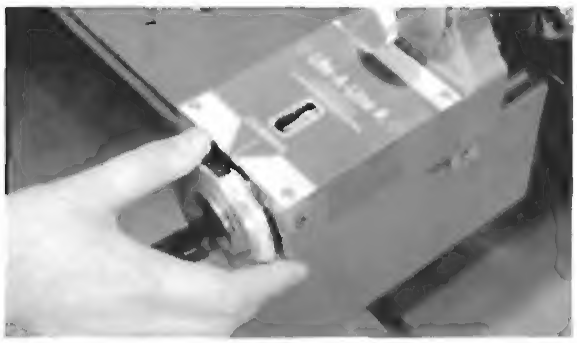
Repeat compensation procedure on opposite instrument.

Apply the parking brake and place transmission in park.

Remove the lock pins from the rear slip plates, lower the rear of vehicle and jounce.

MEASURING REAR CAMBER

Adjust the camber knob to center the camber level bubble and read rear camber on the camber knob scale.

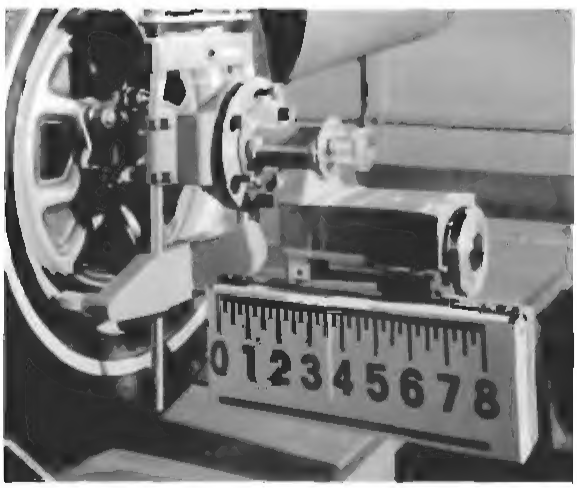


ADJUSTING REAR CAMBER

On vehicles with adjustable rear camber, set camber knob scale on required camber and adjust camber until camber level bubble is centered.

MEASURING & ADJUSTING REAR TOE

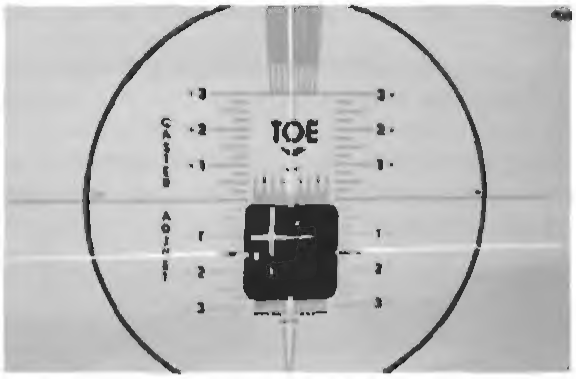
Steer the front wheels to a straight ahead position as indicated by equal vertical light beam readings on both rear wheel scales.



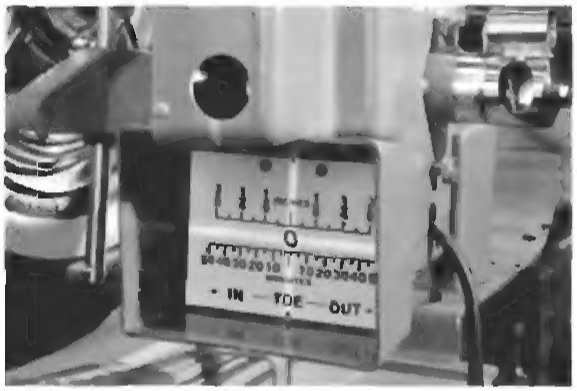
Lock the steering wheel using a steering wheel holder.

Slide each front chart to "0" toe. (Vertical light beam on zero toe line.)

Loosen the center lock-knob and tilt the left front projector to position the horizontal light beam in the center of the toe mirror window on the left front chart. Retighten the lock-knob.



Using the left toe mirror bar elevation knob (protruding thru the bottom shelf in front of the chart), slide the left hand side of the toe mirror bar so that the vertical light beam is centered on the zero toe line in the projector front toe box.



Slowly turn the elevation knob to center the horizontal light beam in the toe box scale.

Loosen the center lock-knob and tilt the right projector until the horizontal light beam is centered on the red marks on both sides of the toe mirror window. Retighten the lock knob.

Slowly turn the right elevation knob to center the horizontal light beam in the right toe box scale.

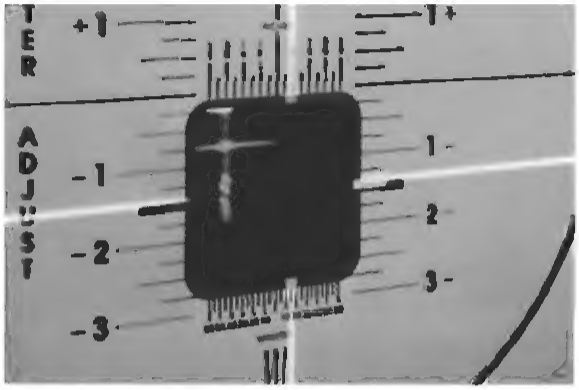
Recheck light beam in left toe box and re-adjust the toe bar to zero the light beam if required.

Read and record total front toe on the scale in the right toe box.

NOTE: If wheels have more than 3/8" (9.5mm) toe, relocate vertical light line in left toe box to any reading and add that amount to reading in right toe box.

EXAMPLE:
Left toe box relocated to show 3/8" (9.5mm) in.
Right toe box shows 1/4" (6.4mm) in.
Total is 5/8" in.

Using the scales above or below the toe mirror window, slide each chart so that the vertical light beam falls on 1/2 of the total toe reading and adjust front toe to "0" on both charts. (Zero total front toe condition.) NOTE: Slide the charts in the direction of toe change.



Confirm zero total toe readings in front toe boxes.

Loosen the center lock-knob and tilt the left front projector until the rectangular image of the rearward light beam is on the rear wheel scale.

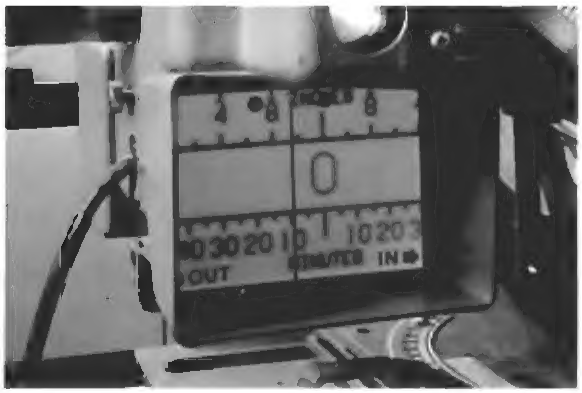
Retighten the center lock-knob.

Repeat for right front projector.

Raise the rear wheel scales to expose the mirrors.

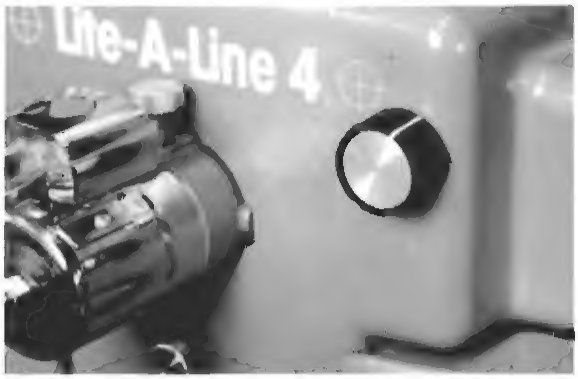
Loosen the lock-knobs on the rear wheel instruments.

Tilt the rear wheel instruments so the scales reflected from the mirrors appear in the rear toe boxes.

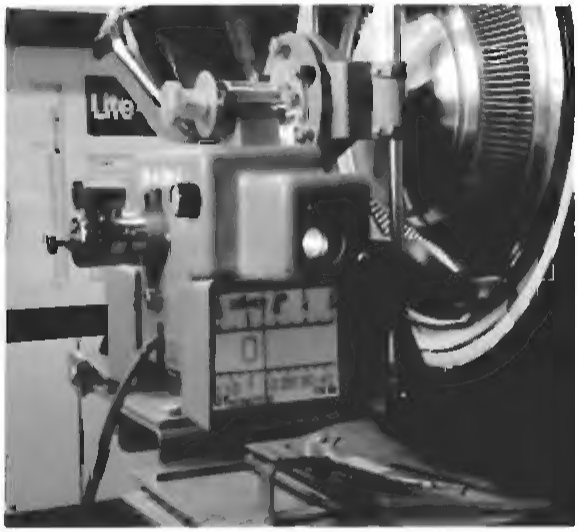


Retighten the lock-knobs.

Focus the scales using the adjustment knobs on the front projectors.



Read individual rear toe in each rear toe box. Adjust to the required specification if necessary.

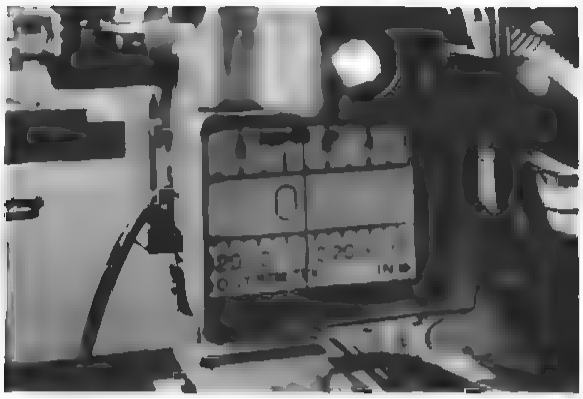


NOTE: If the "0" on the reflected scale is inboard of the vertical red line in the toe box, the values are toe-in values.

EXAMPLE: 1/16" TOE-IN

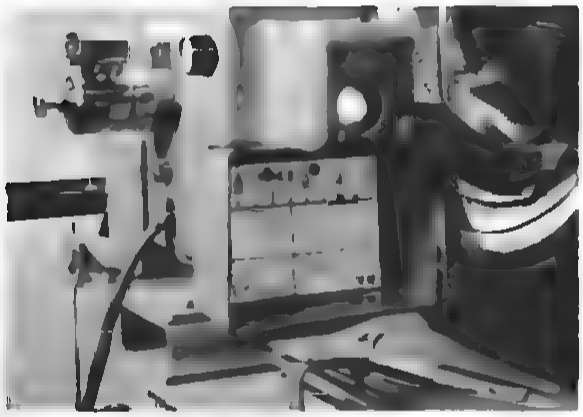
If the "0" on the reflected scale is outboard of the vertical red line in the toe box, the values are toe-out values.

EXAMPLE: 1/16" TOE-OUT

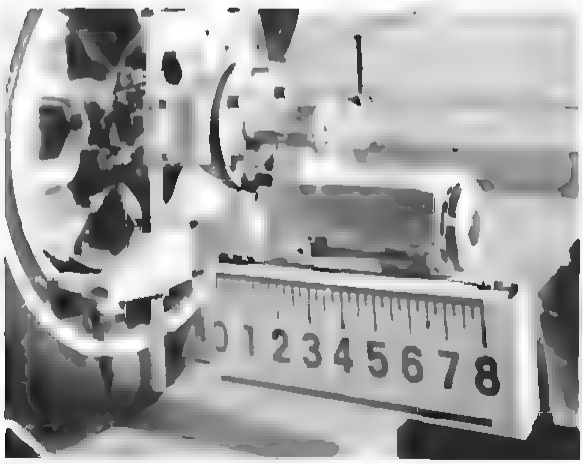


POSITIONING THE FRONT WHEELS STRAIGHT AHEAD

THRUST LINE REFERENCE: With rear wheel instrument mirrors exposed, steer the wheels straight ahead as indicated by equal readings in rear toe boxes.



GEOMETRIC CENTERLINE REFERENCE: Steer the wheels straight ahead as indicated by equal vertical light beam readings on both rear wheel scales.

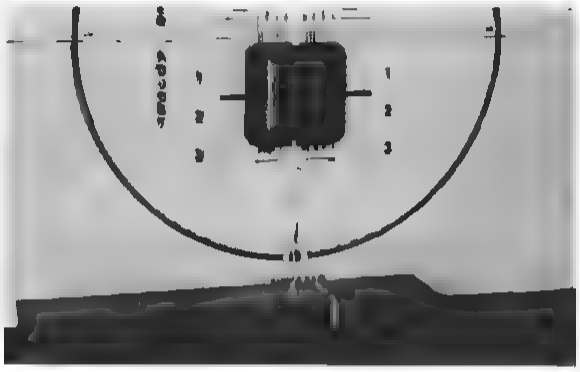


MEASURING FRONT CAMBER

Note: An excessive toe condition may cause incorrect camber readings. Refer to vehicle manufacturer's specified alignment procedures.

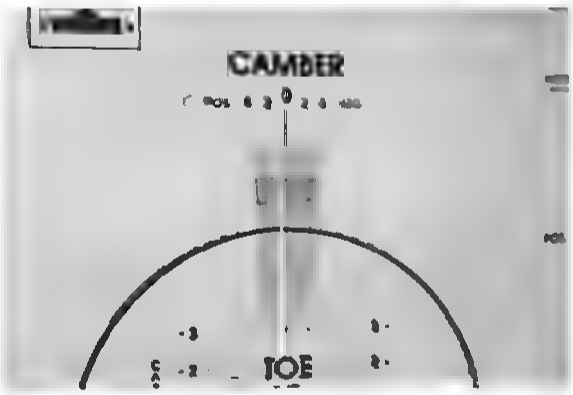
Reposition the front wheel chocks to the rear wheels.

With wheels in the straight ahead position, slide the left front chart so that the bottom end of the vertical light beam centers in the red dot at the camber base.



Loosen the lock-knob and tilt the projector, if necessary, to bring the upper portion of the light beam onto the camber scale. Retighten lock-knob.

Read and record camber on camber scale at top of chart (read at center of light beam).



Follow same procedure for right wheel.

MEASURING CASTER

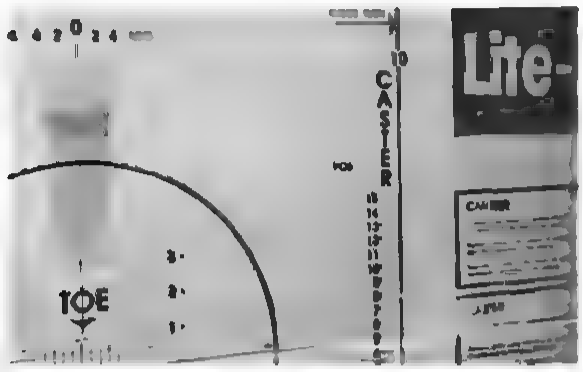
Note: An excessive toe condition may cause incorrect caster readings. Refer to vehicle manufacturer's specified alignment procedures.

Remove the steering wheel holder if installed.

Loosen the projector lock-knob and allow the projector to swing free.

Set the wheels in the straight ahead position and center the charts on the light beams.

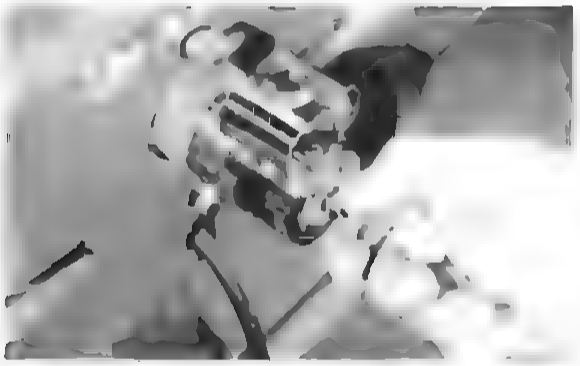
Turn the wheel to position the vertical light beam on either 10° turn line.NOTE: *For positive caster over 8°, make the first turn to the OUTSIDE 10° turn line.*



Tilt the projector to position the horizontal light beam to zero (± 1/2°) on the caster scale.

Tighten the projector lock-knob.

Using the caster leveling screw, carefully center the caster level bubble.



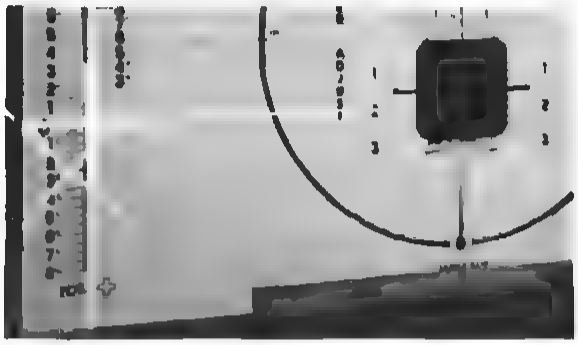
Adjust the *center* of the caster "X" light beam to zero on the caster scale using the vertical positioning screw. (Be sure level remains centered.)

Loosen the projector lock-knob and turn the wheel to position the vertical light beam on the opposite 10° turn line.

Tilt the projector to position the horizontal light beam to zero (± 1/2°) on the caster scale.

Tighten the lock-knob.

*Re-*center the caster level, read and record caster at the center of the "X" on the caster scale.



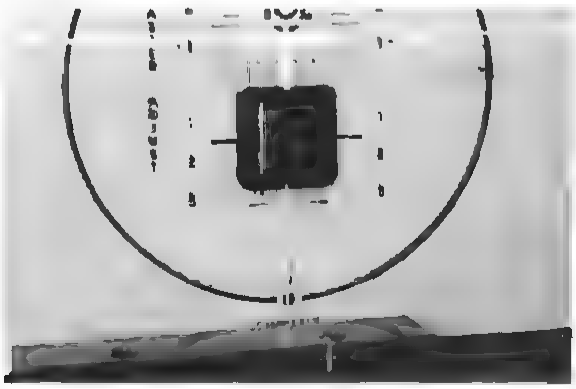
Repeat procedure for the opposite wheel.

ADJUSTING CAMBER

Apply parking brake and chock the rear wheels.

Set the wheels to the straight ahead position.

Move charts to center the bottom of the vertical light beam in the red dot at the camber base.



Make camber adjustments while observing vertical light beam changes on the charts. (Keeping the vertical light beam in the red dot at the camber base.)

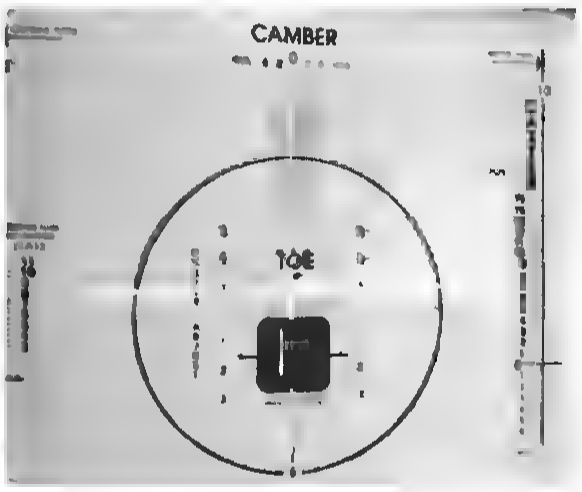
If camber adjustments are made with the wheels jacked-up, determine the amount of change required and adjust so as to add or subtract this amount from the camber readings obtained when the vehicle is jacked-up.

ADJUSTING CASTER

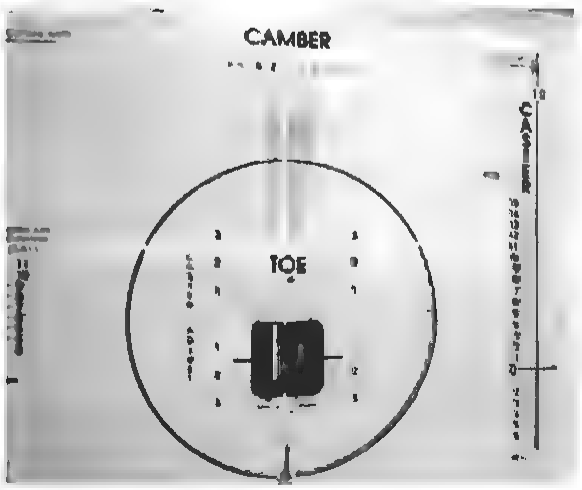
Apply parking brake and chock rear wheels.

Lock the brakes using a brake pedal depressor, and take up any brake slack. (Start engine before locking brakes on vehicles equipped with power brakes.)

Adjust the charts to place the vertical light beams approximately on the zero camber line.



Tilt the projector until the horizontal light beam falls on the caster adjust scale at the previously obtained caster reading. Retighten the lock-knob.



Adjust caster to the required setting observing the horizontal light beam on the caster adjust scale. NOTE: If The vehicle caster exceeds 3°, place the horizontal light beam on zero (caster adjust scale) and adjust caster the amount of correction only.

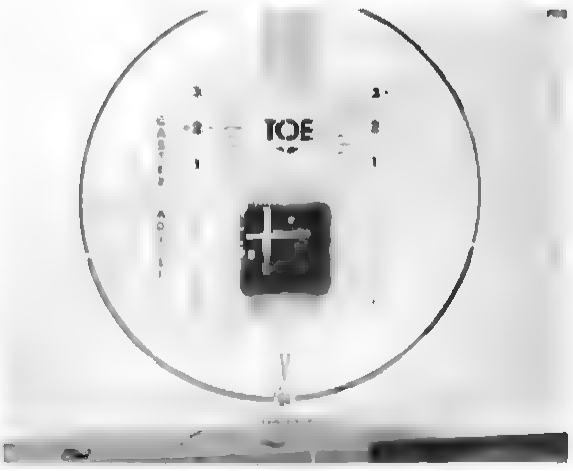
Caster adjustments may be made with the vehicle jacked up or on the turning angle gages.

ADJUSTING FRONT TOE & CENTER STEERING (FOUR-WHEEL ALIGNMENT - VEHICLES WITH ADJUSTABLE REAR TOE) & (TWO-WHEEL ALIGNMENT)

Steer the front wheels to a straight ahead position as indicated by equal vertical light beam readings on both rear wheel scales.

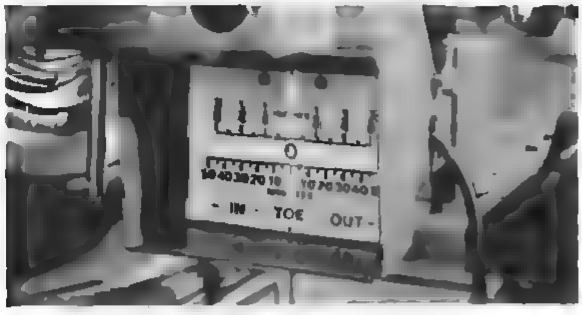
Slide each front chart to "0" toe. (Vertical light beam on zero toe line.)

Loosen the center lock-knob and tilt the left front projector to position the horizontal light beam in the center of the toe mirror window on the left front chart. Retighten the lock-knob.



Using the left toe mirror bar elevation knob (protruding thru the bottom shelf in front of the chart), slide the left hand side of the toe mirror bar so that the vertical light beam is centered on the zero toe line in the projector front toe box.

Slowly turn the elevation knob to center the horizontal light beam in the toe box scale.

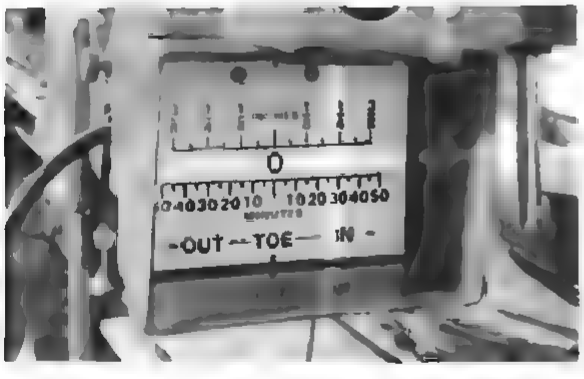


Loosen the center lock-knob and tilt the right projector until the horizontal light beam is centered on the red marks on both sides of the toe mirror window. Retighten the lock knob.

Slowly turn the right elevation knob to center the horizontal light beam in the right toe box scale.

Recheck light beam in left toe box and adjust toe mirror bar to zero light beam if required.

Read and record total front toe from the scale in the right toe box.



Slide each chart (in direction of toe change) to 1/2 of the required total toe correction.

Level the steering wheel (with motor running on vehicles equipped with power steering) and lock in position with a steering wheel holder.

Adjust left and right toe until the vertical light beams are on the "0" toe line on the charts. (Be careful not to move the charts or the vehicle.)

With the wheels in the straight ahead position, recheck toe measurements.

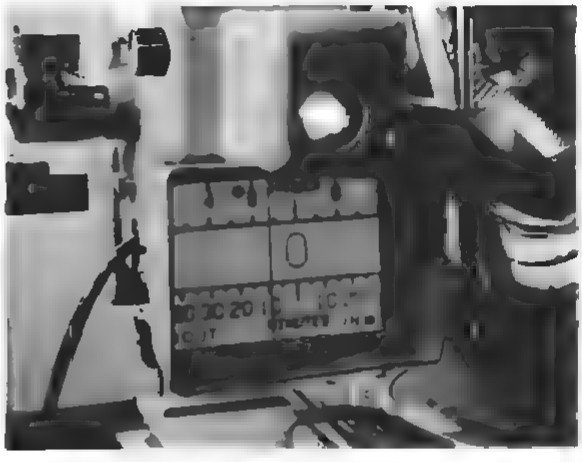
ADJUSTING FRONT TOE & CENTER STEERING (FOUR-WHEEL ALIGNMENT - VEHICLES WITHOUT ADJUSTABLE REAR TOE)

Loosen the center lock knob and tilt the left front projector until the rectangular image of the rearward light beam is on the rear wheel scale.

Retighten the center lock knob.

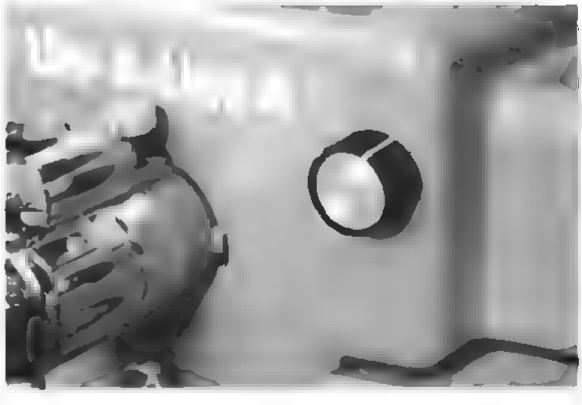
Raise the left rear wheel scale to expose the mirror.

Loosen the lock knob on the rear wheel instrument and tilt so the image reflected from the mirror appears in the rear toe box.



Retighten the lock knob.

Focus the image using the adjustment knob on the front projector.

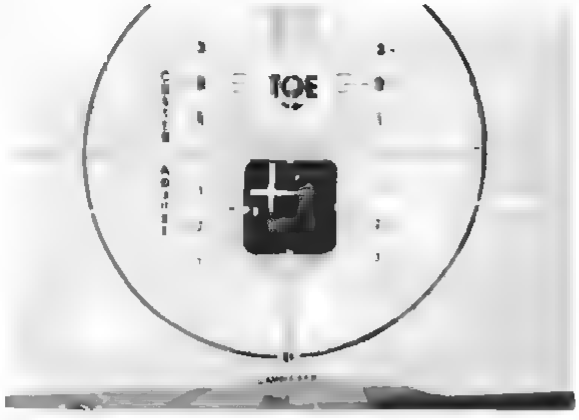


Repeat this procedure for the right front projector and rear wheel instrument.

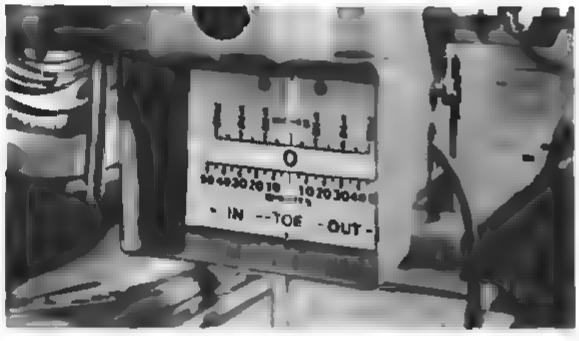
Steer the front wheels until the readings are equal in each rear toe box.

Slide each front chart to "0" toe. (Vertical light beam on zero toe line.)

Loosen the center lock-knob and tilt the left front projector to position the horizontal light beam in the center of the toe mirror window on the left front chart. Retighten the lock-knob.



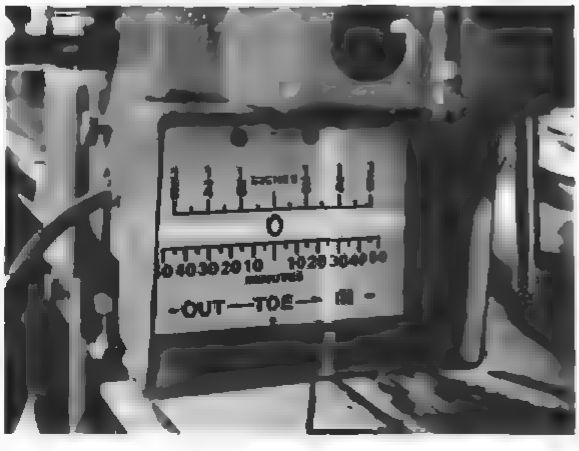
Using the left toe mirror bar elevation knob (protruding thru the bottom shelf in front of the chart), slide the left hand side of the toe mirror bar so that the vertical light beam is centered on the zero toe line in the projector front toe box.



Slowly turn the right elevation knob to center the horizontal light beam in the right toe box scale.

Recheck light beam in left toe box and adjust toe mirror bar to zero light beam if required.

Read and record total front toe from the scale in the right toe box.



Slide each chart (in direction of toe change) to 1/2 of the required total toe correction.

Level the steering wheel (with motor running on vehicles equipped with power steering) and lock in position with a steering wheel holder.

Adjust left and right toe until the vertical light beams are on the "0" toe line on the charts. (Be careful not to move the charts or the vehicle.)

With the wheels in the straight ahead position, recheck toe measurements.

MEASURING S.A.I. (Steering axis inclination) and INCLUDED ANGLE

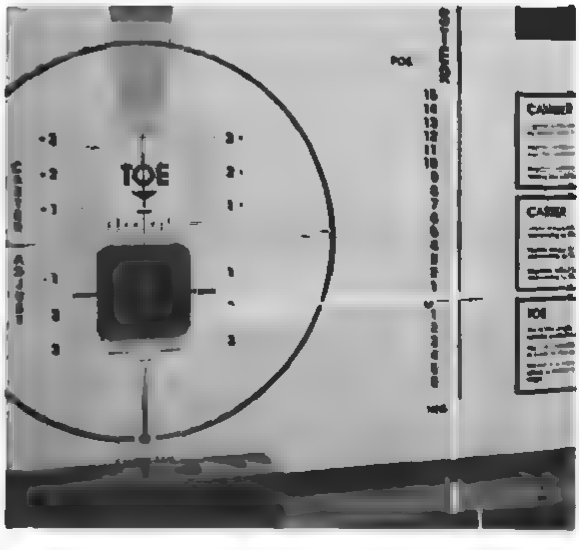
Lock the brakes using a brake pedal depressor. (Start engine before locking brakes on vehicles equipped with power brakes.)

Jack up the front wheels to clear the turning angle gage and take up any brake slack.

With the wheels in the straight ahead position, record the camber readings on both wheels.

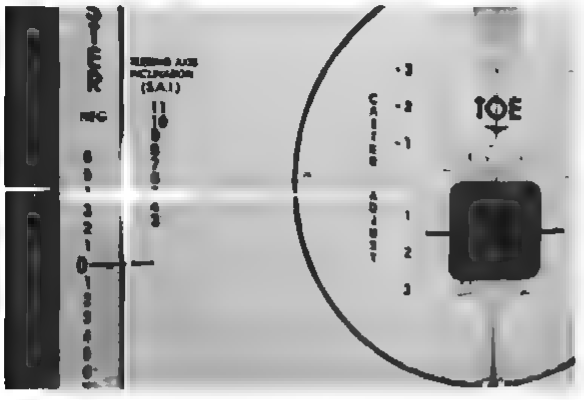
Loosen the lock-knob and steer either wheel to position the vertical light beam on the 10° inside turn line.

Tilt the projector to position the horizontal light beam to zero on the caster scale. Retighten the lock-knob.



Steer the wheel to position the vertical light beam on the 10 outside turn line.

Read S.A.I. where the horizontal light beam intersects the S.A.I. scale.



To obtain the INCLUDED ANGLE add positive camber angle to, or subtract negative camber angle from, the S.A.I. angle.

NOTE: Do not jar projector or wheel during S.A.I. measurement. Re-check by steering the wheel to position the vertical light beam on the original 10° turn line. The horizontal beam should intersect the turn line at zero.

MEASURING TURNING ANGLE

NOTE: Toe must be adjusted to specification prior to measuring turning angle.

With the wheels in the straight ahead position, resting on turning angle gages (turning angle gages on zero and lock pins removed), swing the left wheel out 20° (vehicle left-hand turn).

Read the turning angle of the right wheel on its turning angle scale. (The angle will be less than 20°. Refer to vehicle manufacturer's specifications).

With the wheels in the straight ahead position, swing the right wheel out 20° (Vehicle right-hand turn).

Read the turning angle of the left wheel on its turning angle scale.

NOTE: Some specifications require turning the wheel 20° IN, and in this case, the turning-angle specs are for the wheel on the inside of the curve and will be greater than 20°.

CALIBRATION

A periodic check of all parts of the operating system in accordance with the following procedures will assure keeping the equipment in top condition.

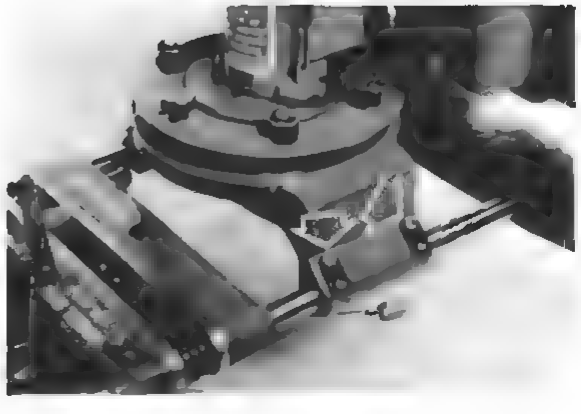
PROJECTORS

The Hunter Lite-A-Line 4 is a light beam type projector that may be checked for accuracy by the operator. This procedure is relatively simple and easily performed, but very close attention should be paid to all of the following steps:

CHECK PROJECTOR ADAPTOR FOR LOOSENESS

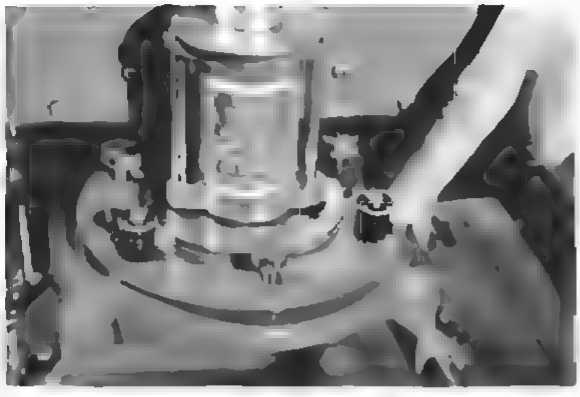
With the projector lying in a horizontal position on the four rim screws, check for looseness between the center casting and the adaptor rods. (Check by feeling with the fingers while attempting to move the projector head up and down slightly.)

To remove any play, snug up on the two phillips head screws on each side of the center casting. NOTE: snugging-up on the screws too tightly will interfere with the sliding of the center casting on the adaptor rods.



CHECK COMPENSATOR ASSEMBLY

Check the three springs for weakness or breakage.



Position the compensator screws so that only the ball ends are visible. Check the assembly for looseness or weakness. (Be sure both nuts on the back of the bearing shaft are tight.)

Move center casting to contact bottom casting.

Check bearings for end and radial play by gently moving projector head up and down while feeling for looseness. No play should be felt.

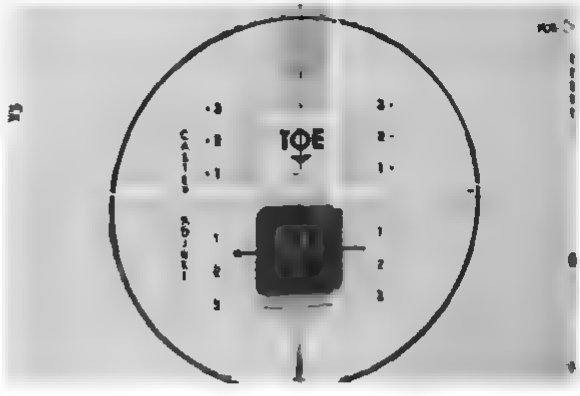
CHECKING CAMBER AND TOE LIGHT BEAM ACCURACY

Position the projector on the alignment rack with the rods parallel to and approximately 6 feet from the charts.

Point one of the camber/toe beams at the chart and mark one of the ends of the light beams. (NOTE: When observing the front camber/toe light beams on the chart, the center portion, about 5" (127mm), of the cross appears slightly out of focus. This is normal, due to the dual focus optics of the lens system.)

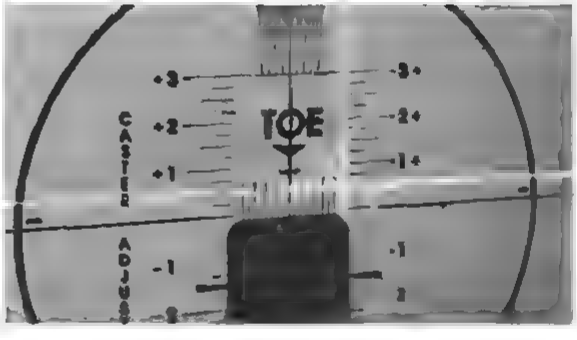
Loosen the projector lock knob so the projector swings freely.

While holding the lamp cord, slowly rotate the projector head. The front and rear light beams should intersect the mark within one width of the beam. (NOTE: If not, contact a factory Service Representative to determine the problem.)

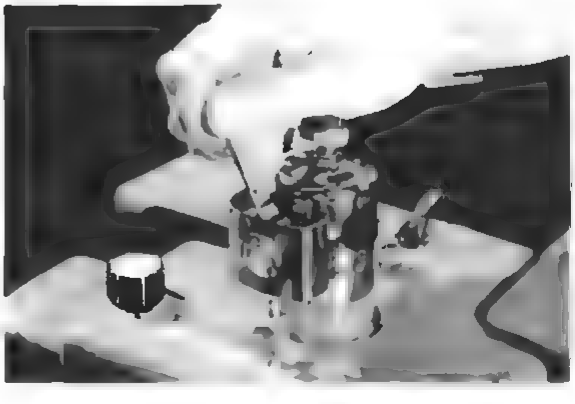


CHECKING CASTER "X"

Using the same setup as for camber/toe, swing the projector head so that the caster "X" beam appears on the chart.

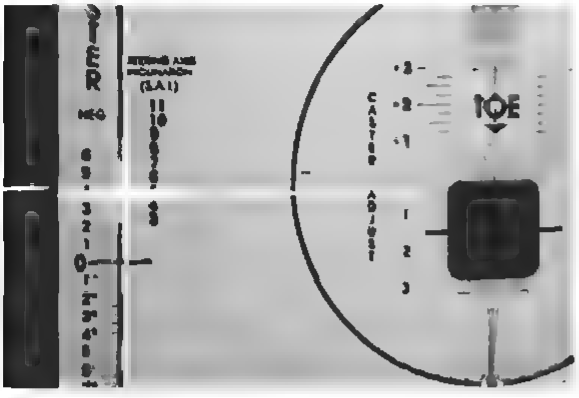


The center of the "X" beam should be approximately 5/8" (15.9mm) above the horizontal light beam. (To adjust, loosen the mirror adjustment screw and turn the mirror assembly to bring the "X" beam to 5/8" (15.9mm) from the horizontal light beam.) Retighten the mirror adjusting screw.



Steer the wheel to position the vertical light beam on the 10 outside turn line.

Read S.A.I. where the horizontal light beam intersects the S.A.I. scale.



To obtain the INCLUDED ANGLE add positive camber angle to, or subtract negative camber angle from, the S.A.I. angle.

NOTE: Do not jar projector or wheel during S.A.I. measurement. Re-check by steering the wheel to position the vertical light beam on the original 10° turn line. The horizontal beam should intersect the turn line at zero.

MEASURING TURNING ANGLE

NOTE: Toe must be adjusted to specification prior to measuring turning angle.

With the wheels in the straight ahead position, resting on turning angle gages (turning angle gages on zero and lock pins removed), swing the left wheel out 20° (vehicle left-hand turn).

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CALIBRATION

A periodic check of all parts of the operating system in accordance with the following procedures will assure keeping the equipment in top condition.

PROJECTORS

The Hunter Lite-A-Line 4 is a light beam type projector that may be checked for accuracy by the operator. This procedure is relatively simple and easily performed, but very close attention should be paid to all of the following steps:

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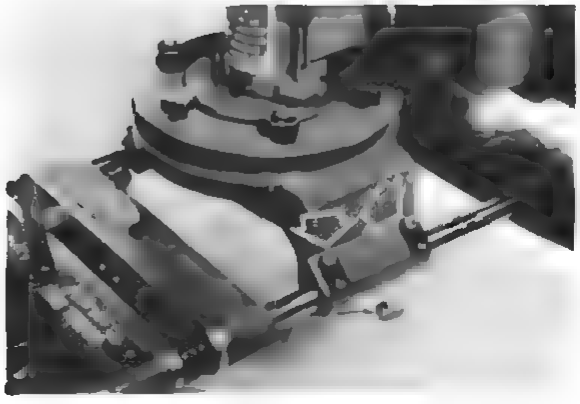
With the projector lying in a horizontal position on the four rim screws, check for looseness between the center casting and the adaptor rods. (Check by feeling with the fingers while attempting to move the projector head up and down slightly.)

To remove any play, snug up on the two phillips head screws on each side of the center casting. NOTE: snugging-up on the screws too tightly will interfere with the sliding of the center casting on the adaptor rods.

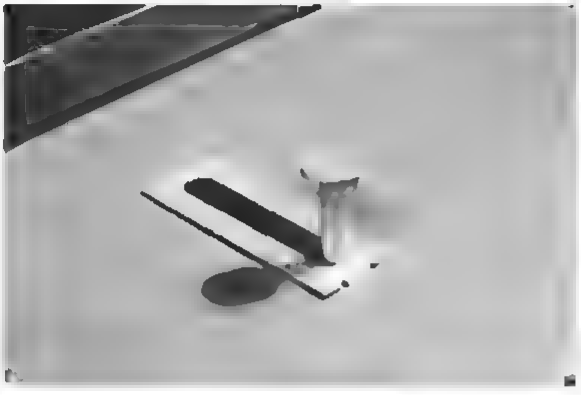


CHECK TOE MIRROR BAR

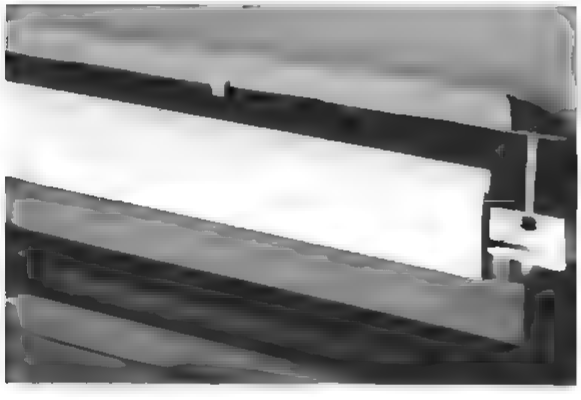
Remove both charts.

Center the left side mirror on the mirror bracket.

Slide both toe mirror bar elevation knobs to the front of the slots.



Remove the peep gage, fold feet and place directly in front of, and 1/8" (3.2mm) away from, the toe mirror bar.



Sight down between the left end peep gage and the toe mirror.

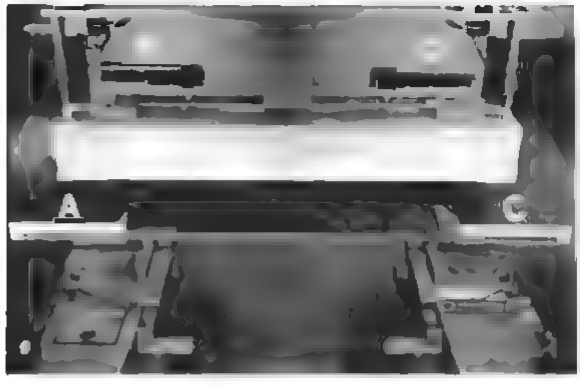
Move the peep gage right or left to line up the vertical lines of the center crosses of the mirror and peep gage.

Sight between the right end peep gage and toe mirror. If the vertical lines of the center crosses do not line up, loosen the RIGHT mirror retainer clips and slide the mirror until the crosses are perfectly aligned. Tighten the mirror retainer clips (do not over-tighten).

Recheck both ends to be sure the crosses are perfectly aligned.

Remove the peep gage from in front of the mirrors, unfold the feet and rotate them to 90° from the peep gage.

Place the peep gage on the turning angle gages, parallel to and 70" (1778mm) from, the toe mirrors. (NOTE: The center of the turning angle gages are approximately 70" (1778mm) from the toe mirrors.)



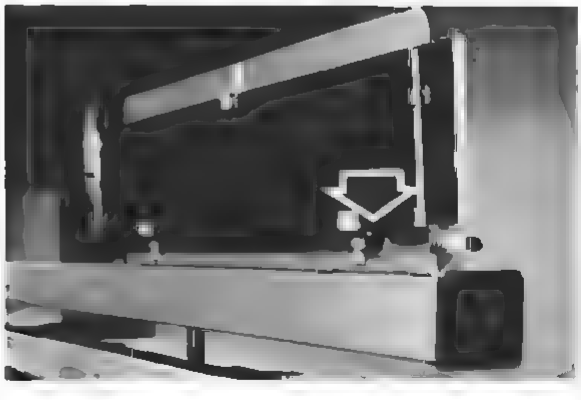
Sight through the center hole at the left end of the peep gage (point A).

If the horizontal lines of the peep gage (point A) and toe mirror crosses (point B) do not line up, adjust the left elevation knob until the horizontal lines are approximately aligned. (Within 1/16" (1.6mm) of one another.

Repeat procedure at the right end of the peep gage (point C) and toe mirror (point D).

Sighting through the center hole in the left end of peep gage (point A), slowly slide the peep gage sideways until the vertical lines of the center crosses (points A and B) line up perfectly.

Sight through the center hole of the right end of peep gage (point C) and using the toe mirror adjusting screw, perfectly align the vertical lines of the center crosses (points C and D).

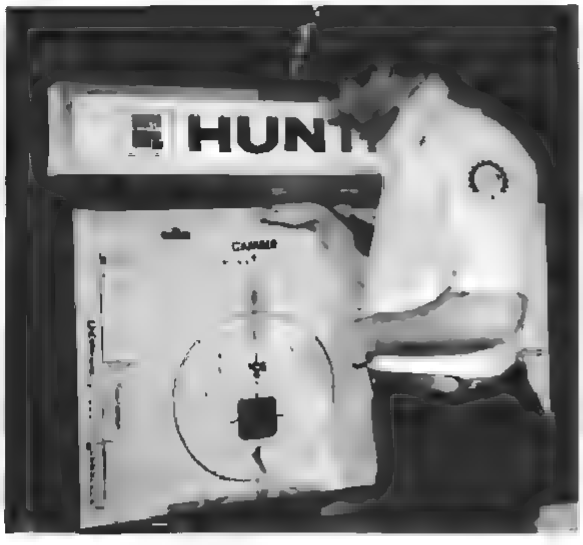


Check the inner and outer peep gage crosses on both ends to be sure all vertical lines are aligned. If all lines are not within 1/64" of being aligned, contact the Hunter Service Representative to determine the cause.

CHARTS

Slide the charts to both ends of travel to be sure rollers are free and move easily.

Check that each chart is vertically positioned using a small plumb bob or weight tied to a string.



Adjust the chart leveling screw to bring the zero camber line to the exact vertical.

If the chart level bubble is not centered, loosen the mounting screws, center the bubble and retighten the screws.

Center the charts.

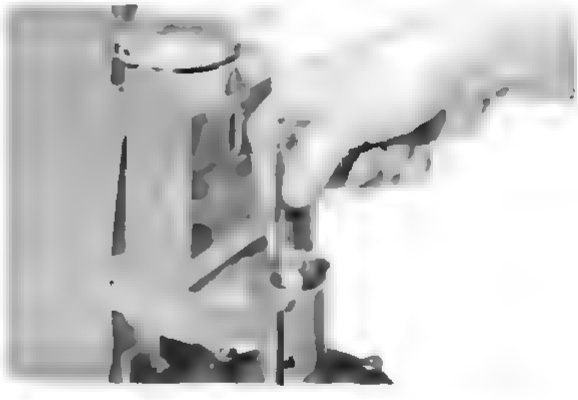
REAR WHEEL INSTRUMENT CALIBRATION

PREPARATION

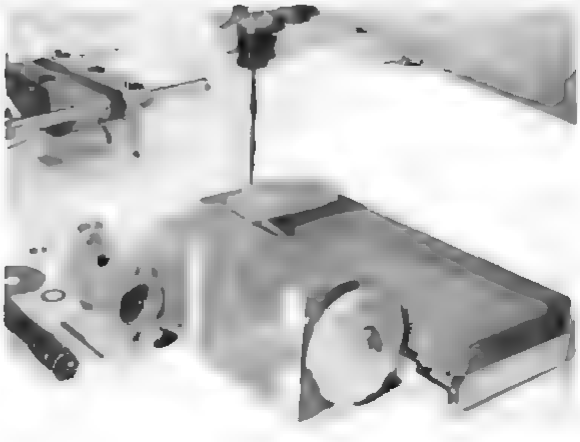
Check calibration level by placing on a reasonable level surface and observing position of level bubble. Rotate level 180°. Bubble should remain in same position. (If not, adjust using the two mounting screws.)

CALIBRATION PROCEDURE:

Using socket, remove instrument from adaptor.

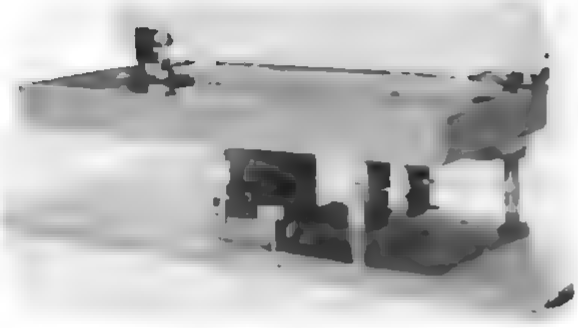


Attach stabilizing block to back of mirror casting.

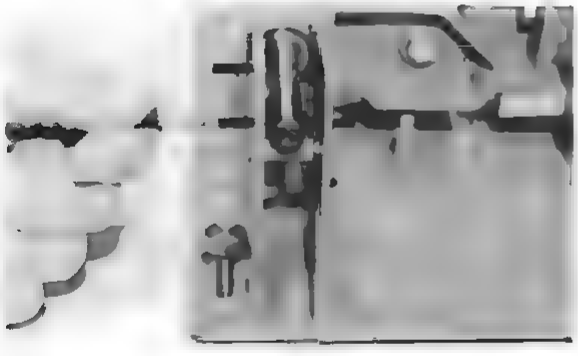


Install calibration shaft in instrument.

Position instrument on fixture base with mirror facing up, and pins on base inserted *into* holes in the instrument casting and stabilizing block.

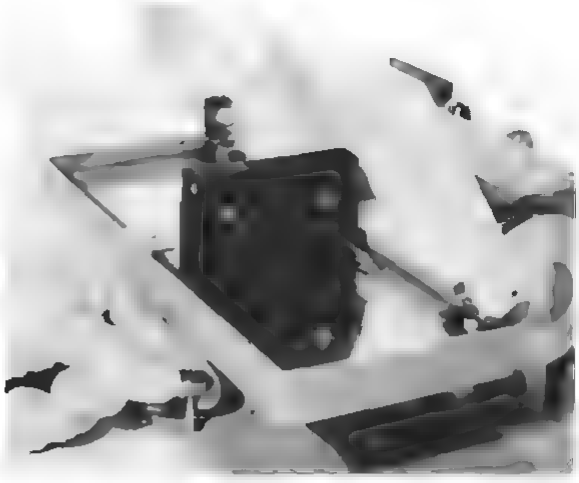


Using set screws, center shaft in fixture.



Carefully position level on calibration shaft and level using the two rear leveling screws.

Position level on mirror perpendicular to calibration shaft and level using the front leveling screw.



Repeat previous two steps as necessary to level instrument in both directions.

Position level on mirror, parallel to the calibration shaft.

Barely loosen the two hex head bolts.

Adjust level of mirror.

Recheck that shaft is *still* level.

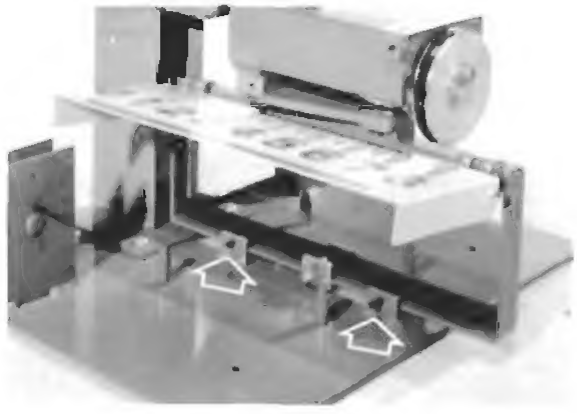
Tighten hex head bolts and recheck levels.

Repeat procedure with remaining instrument.

Attach the vertical fixture to the base, using screws provided.

Lift mirror cover *and* position the instrument on vertical fixture.

Finger-tighten the base set screws to secure the mirror casting to the base.



Place level on calibration shaft and level using front leveling screw.

Rotate camber knob to center camber level bubble.

Loosen camber knob set screw and adjust scale to zero, if necessary.

Tighten set screw and recheck both levels.

Remove instrument from fixture.

Remove stabilizer block and calibration shaft.

Re-assemble instrument on wheel adaptor.

Repeat procedure for the remaining instrument.

MAINTENANCE

PROJECTORS

At first indication of light line dimming, clean all exposed portions of the three lens barrel assemblies (remove lamp support for access to inside surfaces) and the caster mirrors of each projector. Use a soft clean cloth — such as a cotton diaper — and alcohol. Polish with same type cloth.

Clean lamp similarly. Do not touch lamp with bare hands. When replacing a lamp use wrapper provided or a soft cloth.

Always check projectors immediately if dropped or severely bumped or jolted. If light beams do not intersect properly, contact a factory Service Representative to determine the problem.

An occasional drop of oil on the lock pin bearings will keep the pin free.

CHARTS

Clean periodically with detergent and water to keep lines bright and sharp and to keep background at its reflective best. (NOTE: do not wax charts.)

Check charts for levelness frequently, and especially after having been severly bumped or jolted.

Clean roller and track with detergent.

TOE MIRRORS AND BAR

Perfect alignment of the toe mirror bar is essential in order to obtain precise toe readings.

Clean both mirrors at the same time and in the same manner as the projector lenses. Be careful to avoid moving the mirrors while cleaning. It is recommended that alignment be checked with the peep gage following cleaning.

TURNING ANGLE GAGES

The turning angle gages are equipped with dirt and water seals and, consequently, require little maintenance. Exterior surfaces may be cleaned with a light engine oil or kerosene and wiped dry with a clean soft cloth. Do not disassemble. Rub paraffin on pointer and slide mechanism on bottom of turning angle gage. Do not hose down.

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For complete details, contact your local Hunter Representative or the Hunter Research & Training Center, 11250 Hunter Drive, Bridgeton, Missouri 63044, phone 314/731-3020.

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